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ABSTRACT

This report discusses the management of scientific and technical bibliographic data bases by the Federal Government, the existence of overlapping and duplicative bibliographic information services, the application of cost recovery principles to bibliographic information services, and the need to manage information as a resource. Questionnaires were sent to 38 information centers in the Departments of Defense; Commerce; Energy; Health, Education and Welfare; and NASA. Data analyzed in this report are based on responses received from 415 of the 650 users of these information centers who were sent the questionnaire querying their information requirements, the level of satisfaction with center services, and value to them of the information acquired. It is recommended that the Director of the Office of Management and Budget establish policies on cost recovery and require agencies to implement those policies; require agency heads to certify that funds requested to develop or operate bibliographic data bases will not be used to duplicate services available elsewhere; direct each agency to designate a senior official responsible for information management; and establish an interagency coordinating committee for information management. (Author/RAO)

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ED179191

BY THE COMPTROLLER GENERAL

Report To The Congress

OF THE UNITED STATES

Better Information Management Policies Needed: A Study Of Scientific And Technical Bibliographic Services

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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Although the Federal Government spends billions of dollars to create, collect, and disseminate scientific and technical information, it pays little attention to information policies or how information activities are managed.

GAO's study of Government information centers providing bibliographic services to the scientific and technical community confirmed the need for better management cited in many reports in the past. GAO found evidence of duplication, proliferation of facilities, and inconsistent cost recovery practices. The vagueness of authorizing laws and function statements contributes to the duplication of services.

Each department and agency should designate a top official to coordinate and manage its information, and the Office of Management and Budget should establish a committee to coordinate Government scientific and technical information activities.

IR007851

PSAD-79-62
AUGUST 6, 1979

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-133183

To the President of the Senate and the
Speaker of the House of Representatives

This report gives our views on how the Federal Government can improve the management of scientific, technical, and other specialized information. The Office of Management and Budget, working with the Office of Science and Technology Policy, should take the lead in this effort.

We are sending copies of this report to the Director, Office of Management and Budget; the Director, Office of Science and Technology Policy; the Secretaries of Defense; Commerce; Energy; and Health, Education, and Welfare; the Director, National Science Foundation; and the Administrator, National Aeronautics and Space Administration.

Comptroller General
of the United States

COMPTROLLER GENERAL'S
REPORT TO THE CONGRESS

BETTER INFORMATION MANAGEMENT POLICIES NEEDED: A STUDY OF SCIENTIFIC AND TECHNICAL BIBLIOGRAPHIC SERVICES

D I G E S T

The Federal Government needs to recognize the value of the scientific, technical, and other specialized information it produces and take steps to manage it as carefully as it does other valuable resources.

This conclusion is supported by GAO's study of the bibliographic systems of 38 information centers in five agencies heavily involved in science and technology. The study

--confirmed the need for better information management cited in many reports over the past decade, and

--identified problems of duplication of services and facilities and failure to recover costs in the operation of scientific and technical bibliographic information systems.

NEED FOR CHANGE IN FEDERAL INFORMATION MANAGEMENT POLICIES

Information--a product of research and development--is an essential tool for the scientific and technical community. Expenditures in the United States for producing, disseminating, and using scientific and technical information have increased more than 300 percent over the past 2 decades and will continue to rise. According to the National Science Foundation, the Federal Government is a significant supplier and user--spending $4.6 billion of the nationwide total of $10.3 billion in 1975. (See p. 1.)

Despite the recommendations of numerous reports over the years, managing information does not have a high priority within Federal departments and agencies.

Agencies generally have not designated a single, high-level official responsible for managing and coordinating information activities. Little attention is paid to coordinating scientific and technical information activities across agency lines. There are no Government-wide policies for its management, nor is there a central focal point for establishing such policies.

Absence of a Government-wide coordinating committee may have resulted in a lower concern for managing scientific and technical information in the agencies and inaction by agency heads on suggested improvements. (See pp. 3 and 4.)

The Office of Management and Budget and the Office of Science and Technology Policy question the need for a permanent coordinating committee, citing a preference for established coordinating mechanisms and short-term committees created to address specific issues. GAO believes that such committees cannot cope adequately with the numerous problems that have existed for many years. To be effective, the committee must have some degree of permanence and continuity; have a formal channel to a strong, central focal point; and receive strong support and leadership from the policymaking level. (See pp. 6 and 8.)

Information management issues requiring top-level guidance and attention on a continuing basis include

--the relationship of information management to management of research and development and other program missions;

--the appropriate relationship between Government and the private sector in the production, storage, and dissemination of information;

--a determination of the types of information that should be made available in the public interest without regard to cost recovery concerns;

--the procedures for determining costs and prices of information services; and

--the procedures used to finance the providing of information service by Government agencies. (See p. 8.)

GAO recommends, therefore, that the Director, Office of Management and Budget, should

--direct each department and agency to designate a high-level official responsible for information management;

--establish an interagency coordinating committee for scientific and technical information management, comprised of high-level officials representing the departments and agencies, with a formal channel to the Office of Management and Budget to give it stature and authority;

--coordinate with the Office of Science and Technology Policy; and

--include scientific and technical information management in developing approaches to better information resources management, as recommended by the Commission on Federal Paperwork. (See p. 7.)

The Office of Management and Budget and the Office of Science and Technology Policy also question whether any emphasis on management of information resources might interfere with the mission-related purpose of most information centers. While a change in actual reporting relationships could be appropriate in some instances, GAO believes that the objective of providing overall policy guidance and coordination can be accomplished without changing the organizational structure of most information activities. (See p. 9.)

INFORMATION CENTERS OVERLAP OR DUPLICATE AVAILABLE SERVICES

GAO's review of scientific and technical bibliographic activities in five agencies

confirmed previous studies which found duplicative or overlapping data bases in the Federal and private sectors. (See pp. 11 and 13.) Sixty-three percent of the information managers surveyed were aware of data bases similar to their own, but few had considered the possibility of consolidation. (See pp. 10 and 17.)

Information managers have little incentive to prevent or eliminate duplication because information centers are not required to recover their costs of operation. (See p. 10.) Laws authorizing information centers and statements of their function are so imprecise they allow individual managers to accumulate whatever data they want without considering the possibility of duplication. (See p. 12.)

Also, there is no single source of information on existing data bases which could be used to prevent duplication. (See p. 17.) The Director, Office of Management and Budget, should direct the heads of agencies to certify that funds being requested or used for developing or operating data bases will not be for services available from other Federal agencies or the private sector at less cost. (See p. 18.)

The Office of Management and Budget agrees that there is unnecessary duplication and overlap among bibliographic data bases, and cites its concern in other areas of information duplication. However, it feels that GAO's suggestion that agency heads certify that funds will not be used to duplicate an existing service may not solve the problem. In some instances, some degree of overlap is justified. GAO agrees, but, as a minimum, the decision certifying that some duplication is necessary would have been made at the departmental level and not by the information center manager, as is often the case at present. (See p. 18.)

MATTER FOR CONSIDERATION BY THE CONGRESS

The Office of Management and Budget notes that certification by the agency head would not solve the duplication problem caused by the impreciseness of laws authorizing information centers to collect and disseminate information.

GAO recommends that, where the Congress enacts legislation establishing information centers or clearinghouses, each authorizing act require the agency head to use existing systems in the Federal agencies or the private sector at lesser cost to the extent possible. (See p. 19.)

FEDERAL AGENCIES NOT RECOVERING COSTS CONSISTENTLY

Agencies' policies and practices for recovering the cost of providing bibliographic services to public and private-sector users are not consistent with Federal policies and the Office of Management and Budget guidance:

--Agencies generally did not charge for providing bibliographic services, but when charges were made, cost recovery policies were not applied consistently. (See p. 24.)

--Information centers recovered less than 15 percent of the costs attributed to providing services to outside users. (See p. 25.)

--Costs of bibliographic data services supplied to private organizations, which in turn sold them commercially, were not recovered equitably. (See p. 26.)

--Inconsistent practices in charging users were due partly to the difficulty in interpreting the Office of Management and Budget guidance. (See p. 29.)

--Most information managers could not identify the costs of providing bibliographic services. (See p. 30.)

GAO's survey identified about $19 million in unrecovered costs. The potential for annual cost recovery is several times greater because there are more than 200 Government information centers, and the lack of adequate records on costs makes it impossible for managers to make reliable estimates. (See p. 25.)

In 1977 about three-fourths of all computer-readable, commercially available bibliographic records were maintained outside the Government. Nevertheless, private organizations are concerned about competition from Government information centers. They contend that by not recovering the actual costs of services, Government centers are making information available to special groups at prices substantially below cost and, therefore, users are being subsidized by general tax revenues. (See p. 31.)

GAO recommends that the Director, Office of Management and Budget:

--Work with the executive departments to develop a clear policy of cost recovery consistent with applicable statutes, so that departmental decisions on information charging are uniform and made with Office of Management and Budget approval.

--Require each department and agency to develop information on the cost of bibliographic and other information services to serve as a basis for carrying out an effective cost recovery program.

--Require each department and agency to implement the guidance in a manner which will achieve prescribed cost recoveries from users outside and within the Government.

--Examine special cost recovery problems which may be involved in pricing Government services to information retailers.

In some of these areas (such as public interest considerations and pricing issues) the views of the interagency coordinating committee for scientific and technical information recommended in this report should be particularly useful to the Office of Management and Budget in setting policies. (See p. 33.)

Agencies generally agree that full-cost recovery principles should be applied wherever feasible, but cite a need for flexibility in applying cost recovery concepts. GAO agrees that dissemination of information can be made at less than full cost if the determination is based on a Government-wide policy. However, deviations should be considered on the basis of a public policy and not left to the discretion of information center management. (See p. 34.)

MATTER FOR CONSIDERATION BY THE CONGRESS

In view of the difficulty in determining the public interest involved in many Federal information activities, the Congress should consider providing more specific guidance with respect to information services which should be exempted from the general policy of cost recovery. (See p. 36.)

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ABBREVIATIONS

COSATI	Committee on Scientific and Technical Information
DOD	Department of Defense
DOE	Department of Energy
ERIC	Educational Resources Information Center
GAO	General Accounting Office
HEW	Department of Health, Education, and Welfare
IC	Information center
ISI	Institute for Scientific Information
MEDLARS	Medical Literature Analysis and Retrieval System
NASA	National Aeronautics and Space Administration
NSF	National Science Foundation
NTIS	National Technical Information Service
OMB	Office of Management and Budget
OSTP	Office of Science and Technology Policy
STI	Scientific and technical information
USC	United States Code

CHAPTER 1

INTRODUCTION

Expenditures in the United States for the production, dissemination, and use of scientific and technical information (STI) over the last two decades increased phenomenally. A National Science Foundation (NSF) study reported that from 1960 to 1974 STI communications expenditures increased about 323 percent, and growth is expected to continue. The Federal Government, a major supplier and user of information, spent $4.6 billion of the $10.3 billion nationwide-total spent in 1975.

Scientific and technical community information requirements are met by data bases maintained in many fields. The NSF report referred to above measured STI data collection in the following fields of science, as defined by NSF and the Office of Management and Budget (OMB): physical sciences; mathematics; computer sciences and engineering; environmental sciences; engineering; life sciences; psychology; social sciences; and other sciences, including technology assessment and science policy. We added education data bases in our review.

The two major groups of data bases are bibliographic and numeric. Generally, numeric data bases contain facts and figures, while bibliographic data bases contain citations to printed materials.

PURPOSE OF REVIEW

The information sector has become, and will continue to be, increasingly important to the U.S. economy. The Federal involvement is substantial and the capability of the private sector has been growing rapidly. As Federal expenditures increase, so does the need for sound management of information systems. Many past studies reported the need for significant improvements in information management. To supplement these reports, we studied a manageable segment of information activities--selected agencies' collection, storage, and dissemination of scientific and technical bibliographic information. A significant portion of Federal STI expenditures is for these activities.

Government information centers (ICs) are primarily concerned with collecting, storing, retrieving, and disseminating information. Even those centers offering specialized or limited services to small groups of users may offer bibliographic services.

Using questionnaires and letters, we obtained detailed data on the management, costs, policies, and practices of 38 ICs located in five departments that are major producers and users of STI. Questionnaires returned by users of these centers were analyzed to discern their information requirements, level of satisfaction with IC's bibliographic services, and the value to them of the information received. Discussions were held with information managers in the public and private sectors. See chapter 5 for details of the scope of our review.

The problems noted in this report affect the ability of ICs to effectively and economically perform many of their functions, not only to provide bibliographic services. Further, we are convinced, through our examination of information studies and discussions with information field leaders, that the STI issues and problems we identified similarly affect most facets of Federal information activities. Therefore, in our opinion, the Government-wide corrective measures needed do not exclusively apply to STI.

This report shows what steps are necessary to establish Government-wide policies that will achieve efficient STI management, prevent overlapping IC capabilities, and make ICs' operation cost effective. It also addresses concerns which need attention if the Government is to improve overall management of its information.

CHAPTER 2

NEED FOR BETTER FEDERAL INFORMATION ACTIVITIES MANAGEMENT AND COORDINATION

More effective STI management would help to overcome the problems of duplicative or overlapping facilities, uncontrolled growth, unrecovered costs, and inadequate cost accounting records. (See chs. 3 and 4.) Although information as a component of the U.S. economy has grown rapidly, it is usually still treated as a free good, rather than an economic resource, by the Government. Federal departments and agencies have not given sufficent attention and direction to information activities management. There is no mechanism for Federal agencies and other organizations providing information services to coordinate these activities and produce a more economical and efficient resource.

LEVEL OF AGENCY MANAGEMENT FOR INFORMATION

We found that, generally, Federal agencies have not consolidated information management and coordination in a single, department-level official. At the time of our review, none of the five departments and agencies had a central, high-level information policymaker, coordinator, or manager in its organization. Subsequently, several agencies, the Department of Defense (DOD) for one, took steps to upgrade information management. Of 38 IC managers in the five departments, only 1 reported to a high-level departmental official. Most center managers reported to laboratory directors or operations managers and received little overall policy guidance on managing information resources. Organizationally, ICs were usually located within laboratories or mission-oriented operations offices.

Internal audit reports of two agencies have mentioned the lack of information management. One agency was cited for a lack of coordination at all levels and ineffective supervision; the other was cited for permitting two major scientific libraries to follow different policies on providing bibliographic services. In the latter instance, pricing policies had not been uniformly applied because the management controls and related responsibilities for implementing, reviewing, and monitoring their application were fragmented and uncoordinated.

We analyzed 10 major studies of scientific and technical information completed between 1962 and 1978. Seven recommended establishing an information manager at the departmental level. One report concluded that the information function should be formally recognized, and the appropriate direction and control placed at the highest reasonable level in the agency to assure the effective performance of information responsibilities. These studies supplemented our conclusions on Federal information management.

GOVERNMENT-WIDE COORDINATION

Since the 1950s various organizations have had the responsibility for coordinating Government-wide STI activities. One principal organization, the Committee on Scientific and Technical Information (COSATI), was established in 1962. Its primary functions were to

--coordinate agency information services,

--identify gaps and overlaps in both Government and private information services, and

--develop Government-wide standards and compatibility among systems.

COSATI was composed of representatives from major Federal research and development agencies. Its range of activities included broad systems planning, developing Government standards, and reviewing international information agreements.

In 1973 COSATI's functions were phased out to NSF by an interim transfer, with neither a clear legislative mandate nor the necessary funds or staff allocated to its role. According to a report issued in 1976, 1/ when COSATI was dissolved an important forum for dealing with these issues was lost. At least nine other major studies performed during the past two decades recommended some type of Government-wide coordinating organization or mechanism.

The National Science and Technology Policy, Organization, and Priorities Act of 1976 created an Office of Science and Technology Policy (OSTP), a Federal Coordinating Council for Science, Engineering and Technology, and a President's

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1/Domestic Council Committee on the Right of Privacy, "National Information Policy", September 1976.

Committee on Science and Technology. The act set forth national policy, including the principle that effective STI management and dissemination is part of the development and maintenance of a solid science and technology base.

In its examination of the Federal science, engineering, and technology effort, the President's Committee was to include consideration of the Government-wide improvements needed in existing STI systems, including the appropriate role to be played by the private sector in the dissemination of STI. Coordinating Council functions included recommending policies to provide more effective planning and administration of Federal scientific, engineering, and technological programs, and achieving more effective utilization of agencies' associated resources and facilities, including the elimination of unwarranted duplication.

The President's Reorganization Plan No. 1 of 1977 altered and redelegated some of these responsibilities. The Coordinating Council was abolished as a statutory entity and reestablished under the authority of the President. The Director of OSTP serves as Chairman and appoints the Federal agency representatives who comprise the Coordinating Council. The functions of the President's Committee were delegated by the President to the Director of OSTP. The Director also serves as the President's Science Advisor, advising the President, OMB, the National Security Council, and other Presidential staff elements, as well as Department and agency heads, on science and technology policy matters.

Government-wide responsibilities for STI activities are currently divided between OSTP, with the advice and assistance of the Coordinating Council, and OMB. Concentration is on problem solving, utilizing short-term committees. Until recently, there has been no interagency committee to focus on management of Federal STI programs. In January 1979 the Director of OSTP created an ad hoc committee under the Coordinating Council to undertake specific tasks over the course of a year.

Management improvements needed in STI, as indicated by our review and numerous other studies, cannot be achieved at the IC level, but require departmental and Government-wide action. A 1977 NSF report 1/ restated the consensus of previous reports that agencies should establish an official STI focal point with authority as well as responsibility. Further, Government-wide organizations that deal with STI issues,

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1/Results of the Federal Scientific and Technical Information Survey, NSF, May, 1977.

such as coordination, compatibility, and standards, should be strengthened and a COSATI-like committee should be established.

CONCLUSIONS

We believe our review and many highly regarded studies, by such groups as the National Academy of Sciences, NSF. the Library of Congress, the Commission on Federal Paperwork, and the President's Science Advisory Committee, have demonstrated the need for better information management.

Establishing responsibility does not automatically assure effective management. But, until management responsibilities are assigned to a higher level, reported deficiencies are likely to remain uncorrected. Past studies, as well as our review, indicate that the absence of a Government-wide committee may have resulted in a harmful lack of concern for STI in the Federal agencies and inaction by agency heads on suggested improvements.

In most departments and agencies there was no high-level official responsible for STI, who could

--review departmental information responsibilities,

--plan information needs,

--prepare and coordinate information policy,

--inventory information resources,

--monitor information activities,

--recommend improvements in the department's information systems,

--advise the department head on information matters, and

--represent the department on information matters.

To carry out these responsibilities, the information focal point needs to be at a policy level within the department.

A Government-wide committee is needed to provide STI coordination and emphasize the importance of information resource management. This coordinating committee could provide a forum for department and agency STI officials to exchange

information and could serve as a continuing mechanism for considering STI policy issues.

Although it is important to achieve coordination at agency levels, it is also essential that a strong central focus provide support and leadership to the committee. The committee's charter and authority should be clearly defined. The committee's study areas should be specifically directed or approved by the focal organization, and it should be given the backing necessary to examine issues in sufficient scope and depth to be able to cope with them.

To be effective, there must be a formal channel between the committee and a policymaking organization which has authority to address and act on its recommendations. Therefore, we believe that the Director of OMB should be the focal point to receive the committee's information issues reports and recommendations and take the necessary action.

In our opinion, the conclusions of a 1972 NSF study and report are still valid.

> "We come to the unavoidable conclusion that little real progress at the national level is possible unless the Federal Government first recasts and strengthens its management structure for dealing with those problems on a planned and coordinated basis."

Better utilization of the Government's investment in information resources cannot be expected without effective management. The problems identified for STI demonstrate the need for better STI management. Furthermore, they support the need for better coordination and management by the Government of all of its information resources, a matter of current OMB attention in responding to recommendations of the Commission on Federal Paperwork.

RECOMMENDATIONS

Both those investing in information resources and its users would benefit from a strengthened management structure and, therefore, we recommend that the Director, OMB:

--Direct each department and agency to designate a high-level official responsible for information management.

--Establish an interagency coordinating committee for STI management, comprised of high-level officials representing the individual departments and agencies, with a formal channel to OMB to give it stature and authority.

--Coordinate its work with OSTP.

--Include STI management in developing approaches to better information management, as recommended by the Commission on Federal Paperwork.

AGENCY COMMENTS

According to OMB, sufficient coordinating mechanisms already exist and, therefore, it does not agree with the need for a standing interagency coordinating committee for information management. It intends to work closely with OSTP'S recently established committee to address issues related to STI management. (See app. I.) The OSTP spokesman expects that our report will be useful in surfacing issues for its committee, but advises that it has no present intention of creating a permanent coordinating group for STI because its experience has been that standing committees with broad charters are not task-oriented. (See app. II.)

The Department of Commerce spokesman agrees that more effective coordination of Federal information services should be developed, but believes that it is not clear at this time that the coordinating mechanism should be a permanent interagency body. (See app. III.) The National Aeronautics and Space Administration (NASA), however, advises that its past participation causes it to fully understand the value of the kind of management group proposed. DOD sees a need for sound, coordinated management techniques to ascertain the value of information, and for a high-level information focal point for managing coordination within and between agencies.

We believe that a short-term committee cannot adequately cope with the numerous problems identified as needing attention by this and other studies over the past years. Needing resolution are such issues as the relationship of information management to the management of research and development and other program missions; the appropriate relationship between Government and the private sector in the production, storage, and dissemination of information; a determination of the types of information that should be made available in the public interest without regard to cost recovery concerns; the

procedures for determining costs and prices of information services; and the procedures for financing the providing of information services by Government agencies.

A standing committee, with the backing of OMB and OSTP, could serve as a catalyst for identifying and developing permanent solutions to common agency problems. Agency STI managers would have a receptive ear at high levels in the executive branch to consider the significance of the problems, direct their study efforts, and authorize uniform corrective actions.

OMB and OSTP make the point that the responsibilities of information managers cannot be separated from the responsibilities of program managers. We found in our study, however, that information leadership, beyond that necessary to meet narrow, immediate needs was lacking. We believe that a policy-level information official, with the coordination and cooperation of program managers, could more efficiently and effectively meet their information needs, and at the same time better utilize their Department's investment in information resources.

A change in reporting relationships could be appropriate in some instances, but we believe that the objective of providing overall policy guidance and coordination can be accomplished without changing the organizational structure of most information activities. Just as an agency personnel director need not have line control over all employees to provide effective management, an information manager need not usurp the specific responsibilities of the program manager.

An OMB spokesman expressed concern that the recommendations of an STI bibliographic information study could not be projected to deal with a much broader information management area. However, bibliographic information is an important segment of information services, and we found that IC managers need high-level guidance for most aspects of their operations. Further, our study of STI was done against a background of various information management studies showing similar findings. Therefore, we see scientific and technical bibliographic information as illustrating approaches needed for management of information resources as a whole. The Information Industry Association suggests that STI is delimiting, and our report needs to be tied to an overall concern for appropriate management of all information resources. (See app. VII.)

CHAPTER 3

PROLIFERATION OF DUPLICATIVE OR OVERLAPPING BIBLIOGRAPHIC DATA BASES

Although exact duplication is difficult to verify when hundreds of thousands of records are involved, we found evidence suggesting the existence of duplicative or overlapping data bases in the Federal and private sectors. The majority of IC managers surveyed were aware of data bases similar to their own, although few had considered the possibility of consolidation. Over 25 percent of the users said they could obtain 81 to 100 percent of their information needs from sources other than the Federal ICs they were using.

Although the duplication problem has been addressed previously in a number of information services studies, it continues. Private sector providers have expressed concern that the Federal Government is duplicating services they offer. A contributing factor may be that many Federal ICs are not operating in a cost effective manner. (See ch. 4.) Therefore, the information manager has little incentive to prevent or eliminate duplication, or to measure the relative values of overlapping data bases.

Another factor is that the laws authorizing establishment of information centers and their function statements are either silent, vague, or so broad that the center manager can accumulate whatever data he decides is appropriate. In many cases, these decisions are made without reference to already existing data bases, the cost effectiveness of the acquisition, or knowledge of the market potential for the information.

BIBLIOGRAPHIC DATA BASES

Bibliographic data bases contain citations to published and unpublished materials, such as journal or periodical articles, Government reports, speeches, theses, monographs, conference proceedings, and other printed matter. The citations typically provide such information as the title of the article, author, name and issue of the publication, and other identifying data to facilitate its access. Bibliographic data bases may also include abstracts or full texts of the materials cited. The major bibliographic data bases are computerized. The user may select those references he wants to obtain from libraries or other sources to meet his requirements.

Public and private producers use bibliographic data bases to provide their customers with a variety of services, including

--bibliographic searches;

--current awareness services or special subject listings of new material;

--selective dissemination of information;

--periodic indexes in various subjects areas; and

--copies of material cited in bibliographies.

Some of these services may be provided to users at no cost, others on a charge per use or on a subscription basis.

The actual number of Federal bibliographic data bases and the costs of establishing and maintaining them is unknown. However, statistics published by the American Society for Information Science illustrate the extraordinary growth of computerized, commercially available data bases with unrestricted access. In 1965 the Government maintained 12 such data bases containing 396,000 records; by 1977 there were 92 Government data bases containing nearly 14 million records. Similarly, the private sector numbers grew from 12 data bases and 484,000 records in 1965 to 116 data bases and over 44 million records in 1977. More than one-half of the 58 million bibliographic records maintained in 1977 were in STI data bases.

PREVIOUS STUDIES IDENTIFIED DUPLICATION

Many of the studies of scientific and technical information resources have identified duplication as a problem needing resolution. As far back as 1969, the National Academy of Sciences urged Federal agencies to rely on existing capabilities in private organizations and the upgrading of relevant activities when necessary, rather than duplicating such services. According to a 1972 NSF report, new interdisciplinary programs in areas such as health, education, and environment were not properly utilizing existing systems and were incurring unnecessary duplication and cost by building their own systems.

The 1977 report of the National Forum on Scientific and Technical Communication noted the continuing proliferation

of information systems, pointing out that in 1974 the Congress passed 15 laws requiring new information systems without providing coordination responsibility. According to the National Forum's 1978 report, providers of STI operate in an arena lacking policies, guidelines and adequate financial support. Also, the report noted that scientific and technical resources have erroneous information gaps and duplication in information.

INFORMATION CENTERS' AUTHORITY IS NOT DEFINITIVE

Charters, function statements, or other legal authority for information centers establish a broad scope within which information can be accumulated. Their impreciseness contributes to centers' proliferation and duplication of services offered.

Laws or other documents establishing new Federal functions are often vague concerning information collection and dissemination, as shown by the following four examples.

The statement of organization, functions, and delegation of authority in the March 10, 1978, Federal Register concerning the National Clearinghouse for Smoking and Health reads, in part:

> "* * * (5) develops standards, criteria, and methodologies for improved information programs related to smoking and health; (6) serves as focal point for information gathering and as clearinghouse on the dissemination of information on health education, preventive health, and related matters on smoking and health; (7) coordinates the development of materials on smoking and health; * * *"

The "National Health Planning and Resources Development Act of 1974," (Public Law 93-641, Jan. 4, 1975) requires that the Secretary of Health, Education, and Welfare (HEW):

> "* * * establish a national health planning information center to support the health planning and resources development programs * * * to provide access to current information on health planning and resource development; and to provide information for use in the analysis of issues and problems related to health planning and resource development."

From 1972 until 1976, the Office of Education accumulated information in its field under authority of Title 20 U.S.C. 1221c(a) (Supp. II 1972) 1/ which stated, in part, that:

> "The purpose and duties of the Office of Education shall be to collect statistics and facts showing the condition and progress of education * * *, and to disseminate such information respecting the organization and management of schools and school systems, and methods of teaching, as shall aid the people * * * and otherwise promote the cause of education * * *."

Title 20 U.S.C. 1221e(e) (1976), "National Institute of Education," requires, in part, that:

> "In order to carry out the objectives of the Institute, the Director is authorized, * * * to conduct educational research; collect and disseminate the findings of educational research, * * * assist and foster such research, collection, dissemination * * *."

The Chief of the Educational Resources Information Center (ERIC) stated that the present authority establishing the National Institute of Education (cited above) places no limitation on the scope of information which can be collected and added to the ERIC data bases.

Of the IC charters reviewed by GAO, only one provided clear limitations on the scope of information to be collected. Only 13 of 38 ICs cited specific legal authority as the basis for establishing their centers.

EXAMPLES OF DUPLICATION OR OVERLAPPING

Using bibliographic data bases as an example, we examined continuing proliferation within the fields of science. A 1976 American Society for Information Science publication listed 57 publicly available, computerized data bases in the environment field, 99 in the chemistry and chemical engineering fields, and 51 in the medicine field. While the existence of numerous data bases in one field does not necessarily indicate duplication, the greater the number of data bases, the greater the likelihood that it will occur.

1/The current language is not as specific on the authority of the Office of Education to collect and disseminate information.

Duplication of bibliographic data bases encompasses a range from identical data to partial overlap of data.

The principal difficulty in identifying data base duplication is that most of it is not the extreme example of identical data. Partial or differing degrees of overlap appear to be the common condition of bibliographic data bases. Typically, two or more bibliographic data bases in the same subject area each contain unique data, as well as data common to both. Hypothetically, two data bases in marine biology could contain a large percentage of identical marine data, but the balance of data for each could be specialized--one for the Atlantic Ocean, the other for the Pacific Ocean.

The larger data bases contain hundreds of thousands, sometimes millions of pieces of information, with new accessions being added at a rapid rate, making detailed comparisons very costly and time consuming. For these reasons, we made broad comparisons to demonstrate the likelihood of widespread duplication and overlap. Situations where there is a likelihood of some degree of duplication are discussed below.

Example 1

ERIC (of the National Institute of Education, HEW) produces two bibliographic data bases which are available nationally through the largest U.S. commercial vendors of bibliographic information. ERIC data bases may be the most used of all domestic data bases, public and private. In addition, ERIC operates a number of specialized clearinghouses nationwide to meet special education needs. One of these is the Clearinghouse on Career Education.

ERIC officials trace their authority to collect and disseminate information to the statute establishing the National Institute of Education. They also furnished a document which cited an 1867 act as containing a clear mandate of:

> "* * * diffusing such information respecting the organization and management of schools and school systems and methods of teaching as shall aid the people of the United States in the establishment and maintenance of efficient school systems, and otherwise promote the cause of education throughout the country."

However, another organization also provides information on education. The National Center for Career Education, a grantee of the Office of Education, HEW, was first funded in 1977. Its charter, extracted from its original proposal, shows that:

> "The first objective will be to maintain the organizational support for the comprehensive career education training provided to school districts and other formal and non-formal educational organizations. NCCS will identify, collect, classify, catalog, and maintain a computerized bank of career education materials. The NCCS materials system is designed to serve as a national repository of career education materials. The second objective is to establish a network of affiliated centers located across the Nation."

We contacted officials of the National Institute of Education and the Office of Education to determine what coordination had taken place prior to the decision to fund the National Center for Career Education. Officials of both offices said that no coordination, formal or informal, had ever taken place and none was planned. Institute officials stated that the Center duplicated functions already undertaken by ERIC. Officials of the Ohio State University (which operates ERIC's Clearinghouse on Career Education) have complained to the Office of Education that this duplication is confusing to contributors and to users of the ERIC system.

Example 2

The Institute for Scientific Information (ISI), a private firm, offers a wide range of bibliographic information services in a variety of fields. Its data bases are available through commercial vendors of bibliographic information.

We compared ISI's master list of journals in social studies/social science education (from which article citations are added to one of its data bases) with ERIC's list of journals to determine which citations were duplicated. The comparison showed that 51 percent of the ERIC titles were also being added by ISI to its data base. However, this comparison is imperfect because subject area coverage varies between the two sources.

ERIC's coverage of 53 journals includes 13 journals from which all articles are selected for citation purposes and 40 from which only certain articles are chosen. In contrast, nearly all of the journals' articles on ISI's master list are selected for citation. Our examination of the master list showed that ISI has more comprehensive journal coverage than ERIC in the social sciences area, as shown in the following chart:

ISI subject area	Number of journals
Social sciences, interdisciplinary	84
Sociology	103
Social research	4
Social issues	58
Total	249

Using this comparative approach, ERIC's coverage (53 journals) is less than 22 percent of ISI's. However, some journals covered by ERIC are not included in the ISI data base. The fact that each data base producer, such as ERIC or ISI, defines subjects and fields somewhat differently, contributes to the difficulty of making precise comparisons between the contents of data bases.

Example 3

The Controlled Fusion Atomic Data Center is part of the Oak Ridge National Laboratory, Department of Energy (DOE). One of its functions is to collect and disseminate bibliographic information related to certain aspects of atomic energy.

The Atomic Collision Information Analysis Center is located within the Joint Institute for Laboratory Astrophysics, a federally assisted facility at the University of Colorado. Federal funding is provided by the Department of Commerce.

The Director of the Controlled Fusion Atomic Data Center was asked to explain the extent to which the data in his bibliographic data bases was identical to that of the Atomic Collision Information Analysis Center. He stated that his data bases contain all of the information available from the Center, plus considerably more, but the storage formats are different.

Example 4

We obtained information about a new data base that the Department of Labor was constructing with information extracted from the ERIC and the Department of Commerce's National Technical Information Service (NTIS) data bases. This new data base duplicates portions of existing Government data bases. The Department of Labor plans to maintain its data base for use by Employment and Training Administration regional offices, contractors, and State agencies at no charge.

SIMILAR DATA BASES ARE KNOWN TO INFORMATION CENTER MANAGERS

Prominent Government reports have claimed that potential users of Federal STI have been unable to find out where the information exists. There is presently no comprehensive single source (e.g., a directory or clearinghouse) to which an information manager or potential user may refer for information about existing STI data bases. Sixty-three percent of the IC managers responding to our questionnaire were aware of the existence of data bases duplicating or overlapping their own. A possible factor contributing to this condition is that Federal information managers may have been unaware of existing bases when making decisions on creating new bases.

Consideration should be given to the need for and practicality of a single source that identifies existing STI data bases to be used by those establishing new data bases, as well as potential users of federally funded STI.

CONCLUSIONS

It would cost less to extract materials from existing data bases to build a new one than it would to create a new base by acquiring the original source journals. However, more effort should be made to use or enhance existing bibliographic systems and, thus, avoid the unnecessary costs of duplicating existing data bases in a new system.

Duplication has been addressed in numerous reports on scientific and technological communication. The extent to which it has occurred among Federal agencies and between the Federal and private sectors indicates many potential opportunities for consolidation or elimination. Duplication has occurred because:

--There is no source of comprehensive information on existing data bases.

--Legal authority establishing responsibilities for Federal information functions are often vague.

--Information centers which build bibliographic data bases do not have charters or other functional statements limiting the scope of their data collection.

--Agencies or ICs with information and collection responsibilities are not required to certify that existing public and private information sources are not available before adding data to their existing bases or establishing new bibliographic data bases.

RECOMMENDATION

We recommend that the Director, OMB, direct the heads of agencies to require certification or other assurance that funds being requested or used for development or operation of bibliographic data bases will not be for services that are available from other Federal agencies or the private sector at lesser cost, either in their present forms or by modification.

AGENCY COMMENTS

OMB agrees that there is unnecessary duplication and overlap among bibliographic data bases and cites its concern about a similar problem in the dissemination of STI. According to OMB, the principles of a policy it is formulating regarding the distribution of scientific and technical reports could possibly be extended to bibliographic data bases.

The OMB spokesman agrees that our recommendation should be considered. However, he feels that certification alone will not solve the problem, noting that in some instances some degree of overlap is justified.

We acknowledge that this could be so. But, as a minimum, the decision that some duplication is necessary would have been carefully considered by the agency head or the agency's high-level information official. The decision as to what was already available would not have been made by the IC manager or his program director, as is often the case at present.

The interagency STI committee which we are recommending (see ch. 2) could establish criteria for the conditions under which duplication should occur. Also, the presence of the agency's representative on the committee

would offer more awareness of what is available elsewhere, both inside and outside the agency. The benefit of this would be better informed judgments than those at present.

NASA's spokeman concurs with our recommendation, but with the qualification that it not be required to undertake an exhaustive investigation of the capability of the private sector. Rather, it would rely on information at hand and the belief of the certifying official. (See app. VI.) We found much information readily available on private sector services, although not necesarily in one directory or one place. Again, in this instance a departmental information manager would be capable of making a substantiated decision.

The Department of Commerce spokesman agreed that unnecessary duplication should be eliminated, but noted that the same bibliographic item in two data bases may be needed by different users and is not necessarily wasteful. As noted above, the individual needs may be legitimate. But in our review of ICs, we found that the provider of the information generally establishes the form in which it is made available and marketing surveys or solicitations of users' future needs are practically nonexistent.

We believe that much more use could be made of existing data bases. Some would require modification, but in too many instances bibliographic data bases have been established without consideration of whether existing bases in the Federal or private sectors could have met the need.

MATTER FOR CONSIDERATION BY THE CONGRESS

The impreciseness of laws authorizing ICs and their function statements contribute to duplication or overlapping of services. OMB believes that certifying by the agency head that funds will not be used to duplicate existing services will not solve this problem.

Where the IC's function statement is the cause, the presence of a high-level official for information management, aware of existing services, could be effective in defining the scope of the center's information responsibilities.

Where the Congress enacts legislation establishing ICs or clearinghouses, we recommend that each authorizing act confer a coordination responsibility on the agency head, requiring the use of existing systems available in the Federal agencies or the private sector at lesser cost, either in their present forms or by modification, to the extent possible.

CHAPTER 4

COSTS OF FURNISHING BIBLIOGRAPHIC SERVICES ARE NOT BEING RECOVERED CONSISTENTLY

Policies stated in the Federal statutes and OMB guidance generally encourage Government agencies to recover costs of services provided to other Government and certain private users. Agencies are not consistently implementing the objectives of these policies when their ICs provide bibliographic data services. Also, ICs' accounting records do not provide management with adequate information to control costs and assure full recovery of the cost of services provided to users.

Some Federal agencies have recognized that a properly implemented program of cost recovery by information centers would provide a measure of the value of bibliographic data bases. Having such a measurement would help prevent the perpetuation of unneeded data bases and the resultant waste of Federal funds.

FEDERAL STATUTES AND OMB GUIDANCE

Although a few agencies, such as NASA, have their own statutes governing charges to be made for information services, most agencies without such authority charge in accordance with two sections of U.S.C. Title 31. These sections provide the general legal authority for Government agencies to administer charges necessary to recover costs of providing certain services, including bibliographic information services.

Section 483a covers charges to all non-Government entities. It states that it is the sense of the Congress that any service performed or thing of value or utility provided by a Federal agency to any person or organization, except those engaged in official Government business, should be self-sustaining to the fullest extent possible. Each agency head is authorized to prescribe charges which are fair and equitable, considering direct and indirect cost to the Government, value to the recipient, and the public policy or interest served.

The Supreme Court has interpreted this section to limit the charges that an agency can levy against a non-Governmental user to an amount not exceeding the actual value received by the user. Therefore, indirect costs that benefit the public at large, rather than the individual user, or that are incurred in establishing the whole program, rather than the specific services provided, cannot be included in the authorized fee.

(See National Cable Television Association v. United States, 415 U.S. 336 (1974).)

Section 686(a) covers charges to other Government agencies. Departments and agencies which, in the interest of the Government, obtain services or materials from other departments should pay for them promptly on the basis of actual cost. However, if the services can be as conveniently or more cheaply performed by private agencies, they should be obtained through competitive bids.

The Comptroller General has held that "actual costs" for purposes of section 686(a), include "all direct costs attributable to the performance of a service or the furnishing of material" and

> "* * * only those indirect costs which are funded out of the performing agency's currently available appropriations and which bear a significant relationship to the performing of the service or work or the furnishing of materials * * *." (57 Comp. Gen. 674, 682 (1978)).

Therefore, indirect costs are recoverable only if they can be shown, at least by implication, to have benefited the requisitioning agency and would not have been otherwise incurred by the performing agency.

OMB Circular A-25, entitled "User Charges" (although still in effect, appears to have been modified by the decision, National Cable Television, supra), recommends that a reasonable charge be made to each identifiable recipient of a Government service from which the recipient derives a special benefit. Where a service provides the recipient a special benefit above and beyond that which accrues to the public at large, a charge should be imposed to cover the full cost to the Government of rendering that service.

Furthermore, according to the circular, charges should be imposed when services

- --enable the beneficiary to obtain more immediate gains or values, whether or not in money terms, than those which accrue to the general public; and
- --are performed at the request of the recipient and are above and beyond the services received by other members of the same industry, or group, or of the general public.

The circular suggests agencies develop schedules of charges and fees for services or activities covered by the circular and to apply accepted cost accounting principles in determining costs. In general, the circular recommends that the cost computation should cover the direct and indirect costs to the Government of carrying out the activity. It also provides that in charging for special services the maximum fee is to be governed by the total cost of providing the service and not by the value of the service to the recipient.

Under certain circumstances, agencies may make exceptions to the general policy of A-25 when

--the incremental cost of collecting the fees would be an unduly large part of the receipts from the activity,

--furnishing the service without charge is an appropriate courtesy to a foreign country or international organization, or comparable fees are set on a reciprocal basis with a foreign country,

--the recipient is engaged in a nonprofit activity designed for the public safety, health, or welfare,

--payment of the full fee by a State, local government, or nonprofit group would not be in the interest of the program.

DEPARTMENTAL POLICIES AND INSTRUCTIONS

We contacted officials of the five executive departments included in our review to see if they had departmental policies implementing the statutes and OMB Circular A-25. We found that some departments have not issued policies on cost recovery for information services and others have instructions which are inconsistent with their stated policies and the principle of full cost recovery.

DOD officials said that Defense ICs do not normally provide bibliographic services to the public. DOD has issued instructions to its information analysis centers 1/ to apply service charges to recover 50 percent of its direct funding.

1/A special category of centers providing information primarily to Defense activities, secondarily to other Government agencies and, to the extent feasible, to public users.

In instituting these charges, DOD noted that its services had increased to the point where it was obvious that resource allocations could not increase indefinitely to meet demands. Since measures had not been developed to show clearly the benefits derived by improved services, DOD believed that, while not giving an absolute measure of the benefits, the willingness of the users to pay would provide an understandable indication of the services' worth.

DOE's general policy is to price the furnished services and products at full-cost recovery or current commercial rates, whichever is higher. DOE IC managers said the Department's cost recovery policy was developed by the Atomic Energy Commission in 1974. A task force on information center pricing had recommended full-cost recovery consistent with Circular A-25. Part of its rationale was that charging on a full-cost basis for costs incurred for a user should not prevent worthwhile work, and should help identify submarginal efforts being obtained by the user primarily because they are free. Charges to nonagency users would require a decision about whether some services with limited utility, obtained primarily because they are free, would continue to be ordered.

While the DOE policy requires full-cost recovery, published guidance precludes recovery when charging would discourage (a) the use or development of sources for services and products for which DOE is the sole or main source, and (b) research and development and the use of commercial products in the energy application field.

The Department of Commerce's instructions were generally consistent with the policies stated in the statutes and the circular. However, Commerce's National Bureau of Standards has exempted user charges in a variety of circumstances, such as when the time required is 1 hour or less and the total added cost is less than $25. When the request comes from another Government agency, and is of sufficient importance, charges are waived.

Two major information activities of HEW, the Public Health Service and the National Institute of Education, had not issued cost recovery instructions.

We were told by NASA's STI Office during our review that the agency had no policy statement on user charges or cost recovery because when NASA was established there was no plan to serve the general public. In comments on a draft report, we were advised by NASA that it has had cost recovery policies consistent to the extent practicable with those in

Federal statutes or OMB Circular A-25. NASA further pointed out that it has separate statutory authority to provide the widest practicable dissemination of information on its activities and to provide services to users with or without reimbursement.

Our review confirmed that NASA's cost recovery practices are inconsistent. NASA cites the exceptions of Circular A-25 as the basis for providing information free to academe, Government agencies, foreign organizations, and public libraries. Its stated policy since 1975 has been to sell STI to domestic contractors; however, we found that NASA's Scientific and Technical Information Facility regularly provides information free to industry. Since the early 1960s NASA has made its STI available to the general public only through sales.

INFORMATION CENTER COST RECOVERY PRACTICES

There are many inconsistencies between the cost recovery statutes, the various departmental instructions, and the charging policies and practices of the information centers. Costs, with limited exceptions, are not being recovered.

Information obtained from 38 IC managers showed that charging users for bibliographic services was the exception, not the general practice. Only two stated that their charging practices were designed to recover the total cost of providing bibliographic services. Twenty-two reported that no charges were made and 14 recovered only certain items or a certain percentage of costs.

Charging practices are inconsistent among ICs within the same department. For example, of seven ICs within the Department of Commerce, three reported they made no charges, another three recovered only certain items of cost, and one recovered the total cost required to produce bibliographic services. Also, two of the three DOE ICs responding to our questionnaire reported their practices were not designed to recover all costs.

INCONSISTENT CHARGING OF USERS

Various types of IC users are charged inconsistently for services they receive. The following chart displays the average charging frequency by the ICs serving each type of user shown:

User	Percentage of time charged
Industry	55.6
U.S. Government (internal)	17.6
U.S. Government (external)	26.3
State/local Government	38.9
Academic institutions	47.4
General public	50.0
Foreign Government	44.4
Foreign - other	50.0
All users	41.4

An undesirable result of inconsistent charging is that some groups, or some members of a single group, are treated more favorably than others. The Atomic Energy Commission recognized this when setting its cost-recovery policy in 1974, by stating that charging would help to avoid situations where it might be alleged that favored treatment is being given to a special interest group.

When DOD implemented a user charging program for the Defense Documentation Center in 1968, the stated purpose in doing so was, in part:

> "Free services can invite indiscriminate use since these services may be requested without the economic check of need versus cost."

When an IC manager decides not to charge a non-Government user for a service provided, he is also, in effect, causing the taxpayer to pay for that service. The National Oceanic and Atmospheric Administration recognized this tradeoff in its user charging instructions that stated in part:

> "the objective * * * is to provide a method of establishing fair and equitable charges for special services rendered by NOAA, thereby reducing the burden of cost on the general taxpayer."

MOST COSTS NOT RECOVERED

In 1977 ICs recovered only about 15 percent of the costs they attributed to providing users' services.

Managers of 38 centers were asked to furnish data showing the total costs of providing bibliographic services and the actual amount of costs recovered through user charges.

We calculated that the 28 ICs which provided services to users outside their agencies failed to recover approximately $19 million during 1977.

Although the actual number of Government ICs providing bibliographic services is not known, records of the National Referral Center, Library of Congress, show that as of June 1978, there were at least 202 Government ICs. This indicates that potential annual cost recoveries for services rendered by Government centers may be several times the $19 million we computed from our sample.

In addition, we believe that costs of these services are being significantly understated by the centers because of the inadequacies of their cost records. (See p. 30.)

USERS' REACTION TO CHARGING

We asked users of the centers included in this review what they would do if prices for the center's bibliographic services were increased (nearly 87 percent were paying nothing for the information). Of 339 respondents, 6.5 percent said they would stop using the centers, and 37.2 percent said they would request less information from the centers because they would not increase their present budgets for this purpose.

COST RECOVERY FOR SERVICES SOLD INDIRECTLY

Users seeking bibliographic information from Government information centers can gain access either directly or through an intermediary. Direct service occurs when the user requests information from an IC. A search of data bases, either inside or outside the center, is conducted by center employees; and the information is transmitted to the user.

Indirect service by a Government IC occurs when the user requests bibliographic information from a private firm which has acquired the data base from the Government center which produced it. The user may search the private firm's data bases through his own computer terminal or he may have the information delivered to him later. Fair and equitable user charges should be employed by the Government in both methods.

The private firms which make these "indirect" searching services available offer access to several data bases in a wide variety of subject areas. They may be purchased either

from the Government or from private organizations. The largest private computerized bibliographic search concern maintains about 60 different data bases for computer terminal access. At least six of these data bases are acquired from Government organizations, such as ERIC or the National Agricultural Library, which produce them.

Another large Government data base is MEDLARS (Medical Literature Analysis and Retrieval System), which is produced by the National Library of Medicine and made available to users, indirectly, through a private concern. The National Library also offers "direct" searching services of its data base.

The ICs failure to recover the costs of bibliographic services, whether directly or indirectly supplied, results in a general taxpayer subsidy to non-Government users of these services and, possibly, to the private concerns which purchase the data bases and use them in selling their services to the users.

Private concerns publish fee schedules for accessing their various Government and non-Government data bases, but their search volume statistics are proprietary. Therefore, we were unable to estimate the fees collected from users of the Government data bases.

Information we obtained from some Government information providers, who offer their services indirectly through private firms, indicates that the unrecovered cost is many millions annually. For example, ERIC's 1978 budget to support 16 regional clearinghouses and maintain two computer-readable data bases was over $5 million. The data base master tapes are purchased from ERIC by private bibliographic information providers for approximately $660 annually.

The private concerns then offer computer searches of the ERIC data bases. ERIC's Chief informed us that while the largest private firm would not provide statistics on the number of ERIC users, it did acknowledge that ERIC data bases were the most used of all its data bases.

Once the ERIC data base tapes are sold to the private concerns, ERIC receives no additional remuneration from these concerns to apply toward recovery of the annual ERIC system cost. In fact, ERIC clearinghouses commonly pay private information retailers for searches, which the retailers perform against the ERIC data bases.

Two private industry officials, whose firms acquire information from the Government and process it for sale in the information marketplace, told us they would be willing to pay more for the Government information, thus helping the Government to recover its costs. In addition, an Information Industry Association official said he believed that other private industry firms would agree with this position.

ERIC's Chief thought more costs could be recovered. We did not include NTIS in our study. But it is significant to note that NTIS, which operates under separate statutory authority in the Department of Commerce, is nearly self-sustaining through collection of service charges from its customers. One way NTIS recovers costs is through collecting fees based on the use of its data base by one of the private systems.

Our comparison of 1977 and 1978 published prices charged by private firms for the use of various data bases shows that the prices for Government data bases searches tend to be much lower than for privately produced data bases searches. The following table illustrates this comparison.

Examples of Fee Charges

Private sector firm	Data base name	Data base producer	Rate per hour of computer connect time
DIALOG (note a)	Agricola	National Agriculture Library (note b)	$25
	Compendex	Engineering Index, Inc. (note c)	65
	Engeryline	Environment Information Center, Inc. (note c)	90
	CIJE (ERIC)	HEW-National Institute of Education (note b)	25
	Inspec	Institution of Electrical Engineers (note c)	45
ORBIT (note d)	Apilit	American Petroleum Institute (note c)	65
	Biosis	BioSciences Information Services (note c)	65
	CIS Index	Congressional Information Service (note c)	120
	Enviroline	Environment Information Center, Inc. (note c)	90
	NTIS	DOC-National Technical Information Service (note b)	45
BRS (note e)	MEDLARS	National Library of Medicine (note b)	10

a/Lockheed Information Systems, Inc.

b/Government IC.

c/Private IC.

d/Systems Development Corporation.

e/Bibliographic Retrieval Systems.

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In our opinion private organizations which purchase data bases from the Government and market these services to users should be assessed fair and equitable charges by the Government organization producing the data base.

CIRCULAR A-25 REQUIRES CLARIFICATION

The inconsistencies shown by Government ICs in charging their various types of users partly arise from the exceptions (foreign, nonprofit, government users, and others) allowed by Circular A-25 to the general policy of full-cost recovery. Further confusion occurs in interpreting the circular's explanation of the circumstances under which an agency should charge or not charge.

The circular requires that user charges should be imposed when a service

> "* * * enables the beneficiary to obtain more immediate or substantial gains or values (which may or may not be measurable in monetary terms) than those which accrue to the general public (e.g., receiving a patent, crop insurance or a license to carry on a specific business) * * *."

However, the circular also states that

> "* * * no charge should be made for services when the identification of the ultimate beneficiary is obscure and the service can be primarily considered as benefitting broadly the general public (e.g., licensing of new biological products)."

The examples cited in the circular are for services other than information; better guidance is needed, therefore, on the kinds of information services which fall into each category.

GAO believes that cost recovery is an essential element of sound information management. Further, the criteria for determining who should be charged, and how much, should be clearly stated and consistently applied.

Managers of individual ICs should not be required to make the charge or no-charge decisions unless they are supplied with criteria established at the departmental or interdepartmental level. This conclusion was also reached in a 1972 report prepared for the chairman of the Federal Council for Science and Technology. According to the report,

"* * * the responsibility for deciding on the necessity for subsidies lies primarily with the Federal Government. Clarified guidelines for the application and appropriateness of subsidies are much needed."

This issue remains unresolved today.

An OMB official said that Circular A-25 intends that a charge be imposed to recover the full cost of rendering information services. We believe that OMB should work with the executive departments to clarify the circular to state clearly when charges should be made and the manner in which full costs should be recovered. Also, the circular should be revised, in light of court decisions limiting costs that can be charged to users.

INADEQUATE COST ACCOUNTING FOR BIBLIOGRAPHIC SERVICES

OMB Circular A-25, which was promulgated prior to the Supreme Court's decision, National Cable Television, supra, provides that cost computations

--a variety of direct costs including salaries, travel, rent, fee collection costs, operation and depreciation of buildings and equipment, and indirect personnel costs;

--a proportionate share of the agency's management and supervisory costs; and

--the properly chargeable costs of enforcement, research, establishing standards, and regulations.

A necessary prerequisite to implementing an adequate cost recovery system is having information which shows what the costs actually are. Results of our review showed that present accounting for costs by Government ICs is generally inadequate.

We asked the 38 IC managers to complete a schedule showing eight categories of cost information for the center as a whole and for bibliographic services alone. We requested estimates where actual costs were not readily available. Circular A-25 permits costs to be determined or estimated from the best available records in the agency.

One category of information requested was the cost of facilities. This included the costs of building space,

depreciation or rent, utilities, maintenance, and operation of buildings. In 19 cases, IC managers either failed to report facilities costs or reported there were no facility costs for their centers. For bibliographic services alone, 27 managers either failed to report facility costs or reported zero facility costs.

In addition, seven managers reported no personnel costs associated with bibliographic services. This figure is particularly significant because for those centers that did report personnel costs, these costs amounted to almost one-half of their total bibliographic costs.

Because the information for major cost categories is not known by a large number of information center managers, it is apparent that presently they do not have a basis for establishing a program of cost recovery consistent with the policies stated in Federal statutes and OMB Circular A-25.

It is apparent that there is a need for improved information cost accounting in Government bibliographic information centers to assure implementation of cost recovery practices.

PRIVATE INDUSTRY'S POSITION

A number of private profit and nonprofit organizations offer bibliographic information services for sale. Some, such as the American Psychological Association, offer a single data base in a single broad subject area, such as psychology or other behavioral sciences. Others, such as the Institute for Scientific Information, offer a wide range of bibliographic information services in virtually all disciplines of life, environmental, social and physical sciences.

Still others do not produce bibliographic data bases, but function as retailers. At least three private organizations offer computer terminal access to numerous bibliographic data bases acquired from Government agencies and other organizations in the private sector.

Statistics published by American Society for Information Science show that private sector bibliographic data bases increased from 12 in 1965 to 116 in 1977.

Working in a competitive environment, private firms have expanded while charging users for their services by

--employing marketing research techniques to carefully identify information requirements of potential users,

--taking advantage of the most advanced information processing technology, and

--obtaining economic benefits which result from standardization of processing routines and large scale operations.

There is, however, a continuing high-level of concern within the private sector about certain aspects of the Government's involvement in information activities. The Information Industry Association represents over 100 firms in the private sector. In a 1977 letter to OMB the president of the association made the following recommendation concerning the inclusion of all costs by Federal information providers as a prerequisite for determining whether needed information services could be more cheaply provided by the private sector:

"Implementing regulations (for Federal agencies) should not permit agencies to understate or mask true costs."

In the same letter, the association expressed concern that Federal information providers making information available to special groups at subsidized prices which are substantially below cost are

"* * * blocking the emergence of competitive national capabilities based on the economies of scale achieved in so many other areas of our economy."

Its position is that

"* * * provision of subsidized information services by Government to selected populations, at low prices (or no cost at all) is blocking and delaying the ability of the market economy in information to deliver low-priced information to everyone on all available information."

CONCLUSIONS

Federal agencies' cost recovery policies and practices for public and private sector users are not consistent. Confusion exists as to the application of cost recovery principles as stated in 31 U.S.C. sections 483a and 686(a) and OMB Circular A-25. Cost accounting for bibliographic services is inadequate.

The circular itself needs clarification, so that the departments can interpret and apply its provisions uniformly. Private sector information providers are strongly in favor of eliminating Federal subsidies to information providers in the Government. They contend that this practice is hindering the ability of the market economy to offer a wide range of lower cost information services.

The Government's investment in bibliographic information systems has been steadily increasing in recent years, and we believe that one of the most effective ways to exercise managerial control over this valuable resource is through a carefully administered program of cost recovery which will, to the extent possible,

--help assure that only needed services are provided,

--transfer the responsibility for financial support to the users who directly benefit from the services,

--stimulate the development of realistic cost accounting,

--improve decisions by users seeking the most cost effective sources, and

--eliminate Government subsidies of information centers competing with the private sector.

RECOMMENDATIONS

We recommend that the Director, OMB:

--Work with the executive departments to develop a clear policy of cost recovery consistent with applicable statutes and court and Comptroller General decisions, so that departmental decisions on information charging are uniform and made with OMB approval.

--Require each department and agency to develop information on the cost of bibliographic and other information services as a basis for implementing an effective cost recovery program.

--Require each department and agency to implement the guidance in a manner which will achieve prescribed cost recoveries from users outside and within the Government.

--Examine special cost recovery problems which may be involved in pricing Government services to information retailers.

In some of these areas (such as public interest considerations and pricing issues) the views of the interagency coordinating committee for STI recommended in this report should be particularly useful to OMB in setting policies.

AGENCY COMMENTS

OMB agrees that the principles of full-cost recovery should be applied to information services wherever feasible, but cautions against the unlimited application of a single cost recovery concept. OMB believes that any policy should provide sufficient flexibility to permit dissemination at less than full cost when it is determined to be in the public interest.

We agree, but such a determination should be made as Government policy, not left up to the discretion of the individual IC manager or the program manager. Since no Government-produced information is really free--the taxpayer ultimately pays if the user does not--deviations should be carefully considered on a public-policy basis. The STI coordinating committee which we propose would be an informed body for providing advice in making such decisions.

Other agencies refer to various exceptions which they feel warrant consideration. NSF, while agreeing to full recovery in principle, says that an exception should be made where the services are such a small part of an operation that the costs of billing would exceed the collections. (See app. V).) Circular A-25 now provides an exception when the incremental cost of collecting fees would be an unduly large part of the receipts. This exception could be retained.

NSF also feels that high unit costs billed to a few initial users would discourage use of the system. We believe this could be effectively overcome, if the agency information manager were to arrange for support funding during the startup period, allow a reasonable period for the center to become self-sustaining, and cease operations if the desired number of users has not materialized by the end of that time.

NASA agrees with the concept of appropriate cost recovery when STI is made available to the general public, but feels that across-the-board user charges are not in keeping with effective technology transfer. DOD commends

the report for calling attention to the variations between and among agencies in cost recovery policies and practices and its arguments for a uniform cost recovery policy. But, DOD also points out that there must be a concern of the adverse effect on users of requiring full-cost recovery. Both DOD and NASA note that some laws requiring the dissemination of information do not require cost recovery.

Here again, we believe that if these deviations, after deliberate and careful consideration by an interagency coordinating committee, are found to be compelling in the national interest, they should be made part of Federal policy and uniformly implemented by all agencies.

DOE correctly observes that the policy of the Freedom of Information Act, which requires agencies to disseminate records at less than full cost when it is in the public interest, and limits user fees to the "direct costs of * * * [the] search and duplication in other cases," could lead to different charges for Freedom of information requests than others. (See appendix IV.) This problem may have been somewhat alleviated, with regard to computer tapes used for furnishing bibliographic services. In SDC Development Corporation v. Mathews (542 F.2d 1116 (9th Cir.)(1976)), it was held that computer tapes on which library reference materials were accumulated and stored by the National Library of Medicine were not "records" or "agency records" within the meaning of the Freedom of Information Act. Therefore, the act does not apply to requests for dissemination of computer tapes and Government agencies can charge their usual user charges, including the costs of preparing the data base, in addition to the nominal cost of the search and duplication of the first set of tapes.

An HEW official agrees with our report that Circular A-25 is ambiguous and its interpretations serve conflicting purposes; the circular and the Federal policy need clarification before there can be consistent and uniform implementation by the various agencies.

The Information Industry Association calls our recommendations on cost recovery basically sound and long overdue. Uniform cost recovery policies would provide the more business-like Government-wide approach that is needed. The association believes, however, that a full statement of Government policy in this area requires a commitment not just to cost recovery, but to a basic reliance on the operation of the competitive marketplace as well. The association cites the policies of OMB Circular A-76, which governs Federal decisions on when to purchase services from outside contractors.

We agree that the policies of Circular A-76 should be followed by the agencies, in considering whether to obtain the supplies or services from another Federal agency or from the private sector, to ensure that such supplies or services are not available from the private sector at lesser cost. However, the performing agency should not include in its cost items of indirect cost, which are not significantly related to costs that would be incurred by it in executing the requisitioning agency's work and which are not funded from currently available appropriations. (See 57 Comp. Gen. 674, supra).

MATTER FOR CONSIDERATION BY THE CONGRESS

In view of the difficulty in determining the public interest involved in many Federal information activities, the Congress should consider providing more specific guidance with respect to information services which should be exempted from the general policy of cost recovery.

CHAPTER 5

SCOPE OF REVIEW

Questionnaires were sent to 50 information centers in the Departments of Defense; Commerce; Energy; and Health, Education, and Welfare; and NASA to obtain details about their information services, costs, and management policies and practices. Responses from 38 centers (76 percent) were analyzed for this report. The remaining responses were too late, incomplete, or inappropriate for inclusion. Selected centers were visited, and additional information was obtained by direct correspondence with all centers.

Six hundred and fifty users of the 38 information centers were sent questionnaires concerning their information requirements, level of satisfaction with center services and value to them of the information acquired. Four hundred and fifteen responses (64 percent) were received and analyzed.

Departmental audit reports on information activities were reviewed, and numerous STI reports issued by special study groups, commissions and consultants over the past 20 years were studied. A list of prominent information reports is shown in appendix VIII. Applicable statutes and OMB circulars were reviewed.

Discussions were held with information consultants, information users, librarians, officials in departments sponsoring ICs covered by this review, and with officials representing the Office of Management and Budget; the Office of Science and Technology Policy; the President's Reorganization Committee; the National Referral Center, Library of Congress; the National Science Foundation; the Information Industry Association; and various information provider organizations in the private sector.

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

FEB 12 1979

Mr. J. H. Stolarow
Director, Procurement and Systems
Acquisition Division
General Accounting Office
Washington, D.C. 20548

Dear Mr. Stolarow:

This letter provides comments on your draft report entitled "Scientific and Technical Bibliographic Information: A Valuable Resource Needs Improved Management," November 1978. The report discusses the management of scientific and technical bibliographic data bases by the Federal Government, the existence of overlapping and duplicative bibliographic information services, the application of cost recovery principles to bibliographic information services and the need to manage information as a resource. The report recommends that the Director, OMB: establish policies on cost recovery and require agencies to implement those policies; require agency heads to certify that funds requested to develop or operate bibliographic data bases will not be used to duplicate services available elsewhere; direct each agency to designate a senior official responsible for information management; and establish an interagency coordinating committee for information management.

We suggest that the report include a definition of "scientific and technical information."

We agree that the principles of full cost recovery should be applied to Federal information services wherever feasible. In a closely related area we are currently developing a full cost policy for Federal data processing activities. Successful implementation of this policy may permit us to extend its principles to other Federal information activities such as bibliographic data bases. However, we must caution against the unlimited application of a single cost recovery concept. We believe that there are some instances in which full or even incremental cost recovery may not be in the best interests of the Federal

Government and the public. For example, while full cost recovery provides an effective mechanism for measuring demand, it could also become a barrier which precludes low income citizens from obtaining access to information generated with taxpayer dollars. Any policy which is developed should provide sufficient flexibility to serve as a control mechanism, yet not preclude dissemination at less than full cost when it is determined to be in the public interest. Any recommendations the GAO may have on how to achieve this balance would be appreciated.

We also agree with this report that there is unnecessary duplication and overlap among bibliographic data bases. We have been concerned about a very similar problem in the dissemination of scientific and technical information by the Federal Government and have been studying the problems created by the proliferation of Federal information activities. Last year we issued for public comment a draft policy (enclosed) on the dissemination of scientific and technical information which is intended to reduce the proliferation of dissemination activities, increase public access to Federal scientific and technical information, and assure greater use of cost recovery techniques. We are currently in the process of reviewing the public comments on this policy and, after appropriate revisions are made, will publish it once again for comment. While this policy is intended to apply primarily to the distribution of scientific and technical reports, it is closely related to the issues addressed in your report and many of the principles could possibly be extended to bibliographic data bases. In the meantime, we believe there are other alternative solutions which should be explored. For example, the suggestion that agency heads should, when requesting funds for a bibliographic data base, certify that those funds will not be used to duplicate an existing service is worth considering. However, it is unlikely that certification alone will solve the problem, even if based on careful judgment. For example, since there may be instances in which some degree of overlap is justified, criteria need to be established to identify the conditions under which this may occur. It should also be noted that certification may only serve as a means of identifying potential problems and will not, in itself, solve those problems. It will also not solve the problem, identified in your report, wherein the "laws authorizing establishment of information centers and their function

statements are either silent, vague or so broad as to permit the center manager to accumulate whatever data he decides is appropriate." We welcome specific suggestions on how to overcome this obstacle.

We do have some concerns about the section of your report which discusses information management. Since the scope of your study and the body of the report is confined to scientific and technical bibliographic data bases, we believe there is insufficient information provided to justify an extrapolation from the research dealing with the limited area of scientific and technical information to findings and recommendations dealing with a much broader and undefined area of information management. Additionally, while we agree that there are certain information issues which deserve independent treatment, we have reservations about your recommendations.

We believe that the primary responsibility for managing information should reside with the program manager who needs and uses the information, since information is integral to the performance of government functions and it is difficult, if not impossible, to separate the management of information from the management of programs. In our opinion, therefore, the optimum solution is to strengthen the ability of the program manager to use and manage information. At the same time, we recognize that assignment of specific responsibilities for information management may be of value. Our recent draft to OMB Circular No. A-71, for example, ("Responsibilities for the acquisition and management of Federal information technology," enclosed) proposes that each department and agency "assign responsibility for overseeing the agency's acquisition, management, and use of information technology to a senior management official." We believe that this assignment of responsibility is appropriate because it will clearly establish accountability for existing functions, deals with a relatively easy to define resource - technology, and will consolidate and reduce existing organizational assignments. It may be appropriate to consider expanding the responsibilities of this management official to include some of the "information management" functions you address. The advantage of this approach is that it would preclude the need to create a new organizational entity, at a time when the President is actively involved in efforts to streamline the bureaucracy and reduce its size.

Finally, we do not agree with the need for a standing interagency coordinating committee for information management. There are already sufficient mechanisms available to permit the appropriate degree of coordination among departments and agencies. In addition, the Office of Science and Technology Policy has recently established an ad hoc committee, under the Federal Coordinating Council for Science, Engineering and Technology, to address specific issues related to the management of Federal scientific and technical information. We intend to work closely with OSTP and this committee during the coming year.

I hope these comments are of value.

Sincerely,

Wayne G. Granquist
Associate Director for
Management and Regulatory Policy

Enclosures

GAO note: Enclosures not included in this report.

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20500

JAN 2 1978

Harry S. Havens
Director
Program Analysis Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Havens:

I am responding to your request for comments on the draft GAO report, "Scientific and Technical Bibliographic Information: A Valuable Resource Needs Improved Management." The report is primarily directed to the Office of Management and Budget (OMB) because it emphasizes the cost and organizational aspects of bibliographic services. However, as indicated in the following comments, the management of Federal scientific and technical information is an area of great interest to the Office of Science and Technology Policy (OSTP) in which we are becoming substantially engaged.

The section of the report on government wide coordination contains inaccuracies in describing the responsibilities of this Office. The report states on page 40 that responsibilities are divided between the Office of Science and Technology Policy, Office of Management and Budget, and the Federal Coordinating Council for Science, Engineering and Technology (FCCSET). Inasmuch as FCCSET was established, pursuant to Executive Order 12039, to advise and assist the Director of OSTP, it is not correct to draw a distinction between the responsibilities of that body and this Office.

The Act cited (P.L. 94-282), creating this Office, established the post of Director--not that of Science Adviser to the President. The latter is a personal designation by the President and has no standing in law. The Chairman of FCCSET is consequently the Director of OSTP, not the Science Adviser. As Director of OSTP and as Science Adviser, the incumbent advises the President, the Office of Management and Budget, the National Security Council, and other Presidential staff elements, as well as Department and agency heads on policy matters involving science and technology.

The draft report does not reflect the specific provision in our Act assigning responsibility for a review of scientific and technical information. Section 303.(a)(2) required that the President's Committee on Science and Technology consider the need for "improvements in existing systems for handling scientific and technical information on a government-wide basis, including consideration of the appropriate role to be played

by the private sector in the dissemination of such information." That Committee was abolished by Reorganization Plan No. 1 of 1977, but the functions were then delegated by the President to the Director of OSTP.

The text of the report also misconstrues other delegations by the President under Reorganization Plan No. 1 of 1977. The responsibility of OMB for transfer and utilization of R&D applies only to those functions under Sec. 205.(b)(1) of the Act affecting functions of the Intergovernmental Science, Engineering, and Technology Advisory Panel.

The report correctly states that there has been no interagency committee to focus on the management of Federal scientific and technical information programs. However, Dr. Press has just created such an ad hoc committee under FCCSET to undertake specific tasks over the course of the next year. There is no present intention to create a permanent coordinating group because our experience has been that standing committees with broad charters are usually not task oriented. Useful products are not produced. However, at the end of the year this Office in conjunction with OMB will review the desirability of continuing a mechanism in the Executive Office.

Incidentally, the report recommends that OMB take the lead in designating officials in each department and agency to be responsible for information management and in establishing an "information coordinating committee." The OSTP committee will concentrate on scientific and technical information rather than on information generally. However, in view of OSTP's initiative, you may want to revise the recommendation directed at OMB.

In our view, the recommendation that Departments and agencies designate an official to be responsible for information management requires clarification. For example, information management is usually integral to R&D management; consequently, the proposed designation can derogate from the responsibility of R&D managers. The list of responsibilities set forth at the bottom of page 42 for the information manager would have to carefully be limited so as not to interfere with the normal line responsibility in Departments and agencies.

I hope that the above comments will assist in preparation of the final report. We expect the report to be very useful in surfacing some of the issues for consideration by the new FCCSET committee.

Sincerely,

Philip M. Smith
Associate Director
Natural Resources and
Commercial Services

GAO note: Page references in this appendix refer to our draft report and may not correspond to the pages of this final report.

UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Science and Technology
Washington, D.C. 20230
(202) 377-3111

JAN 15 1979

Mr. J. H. Stolarow
Director
Procurement and Systems Acquisition
Division
U.S. General Accounting Office
441 G Street, N.W.
Room 6915
Washington, D.C. 20548

Dear Mr. Stolarow:

This is in reply to Mr. Henry Eschwege's letter to Secretary Kreps requesting comments on the proposed draft report, "Scientific and Technical Bibliographic Information: A Valuable Resource Needs Improved Management."

The report makes a valuable contribution to reviewing the issues in this difficult field.

As the report recognizes, this Department's National Technical Information Service (NTIS) charges its customers for the full cost of providing each information product or service. This practice conforms to the cost and pricing recommendations in chapter 2 of the report, and permits customer demand to determine the viability of individual products and services. Fees charged by NTIS are not governed by 31 U.S.C. 483a, the only statute examined in the report, but by 15 U.S.C. 1153, which provides

> ...to the fullest extent feasible and consistent with the objectives of this chapter, that each of the services and functions provided herein shall be self-sustaining or self-liquidating and that the general public shall not bear the cost of publications and other services which are for the special use and benefit of private groups and individuals; but nothing herein shall be construed to require the levying of fees or charges for services performed or publications furnished to any agency or instrumentality of the Federal Government, or for publications which are distributed pursuant to reciprocal arrangements for the exchange of information or which are otherwise issued primarily for the general benefit of the public.

I should also point out that NTIS, as the clearinghouse for Federal scientific and technical information, serves as the sales outlet for many Federal agencies and stands ready to assist other agencies.

Chaired by Secretary Kreps, an intragovernmental coordinating committee is preparing a domestic policy review of industrial innovation in the United States. The pricing of Government information products and services will be among the issues considered in the course of this review.

With regard to duplication in Government bibliographic data bases, covered in Chapter 3, it cannot be simply assumed that the occurrence of the same bibliographic item in two different data bases is necessarily wasteful. An individual agency's mission orientation is frequently reflected in the indexing of the bibliographic entry in its data base. Indexing suitable for retrieval from one viewpoint may not be satisfactory from another. For example, a medical doctor's approach to retrieving information is very different from that of an engineer or physicist. Accordingly, the indexing philosophy for these three disciplines is considerably different.

On the other hand, I agree that unnecessary duplication of processing must be eliminated. Agencies frequently can avoid the undesirable cost of duplication by exchanging machine-readable bibliographic information as input into their respective systems. This is now done routinely between DoD, NASA, DoE and NTIS with the basic cataloging and indexing captured and transferred so as to minimize duplication of intellectual effort and cost. The development of more such tape interchanges could go a long way towards eliminating unknowing and unnecessary duplication of effort in other Federal information programs.

We agree that more effective coordination of Federal information services should be developed as recommended in Chapter 4, but whether the coordinating mechanism should be a permanent inter-agency body is not clear at this time.

Thank you for the opportunity to comment on the draft report.

Sincerely,

Jordan J. Baruch

GAO note: Page references in this appendix refer to our draft report and may not correspond to the pages of this final report.

APPENDIX IV

Department of Energy
Washington, D.C. 20545

December 27, 1978

Mr. J. Dexter Peach
Director, Energy and Materials Division
General Accounting Office
Washington, D.C. 20548

Dear Mr. Peach:

We appreciate the opportunity to review and comment on the GAO draft report entitled, "Scientific and Technical Bibliographic Information: A Valuable Resource Needs Improved Management."

The draft report discusses the need to recover costs for information services, apparently including direct and indirect costs. This need is based, in part, on 31 U.S.C. §483a which establishes a policy that Government services and publications shall be self-sustaining, and that direct and indirect costs for such services and publications shall be taken into consideration in establishing the price.

The draft report does not consider, or attempt to reconcile, the Freedom of Information (FOI) Act which permits the charging of fees for documents, but limits the fees "to reasonable standard charges for document search and duplication and ... only the direct costs of such search and duplication." 5 U.S.C. §552 (a) (4) (A).

Giving effect to both statutes could lead to different charges to the public depending upon whether a request is styled as a FOI request.

The report indicates that DOE policy does require full cost recovery, but it is not applied when charging would (a) discourage the use or development of sources for services and products for which DOE is the sole or main source, and (b) discourage research and development and the use of commercial products in the field of energy. DOE will review the adequacy of the cost data captured by the information centers for bibliographic services if OMB directs all departments and agencies to recover all costs for such services regardless of programmatic or public interests.

We would be pleased to provide any additional information you may require in this matter.

Sincerely yours,

George C. Peck

Donald C. Gestiehr
Acting Director
GAO Liaison

CR
Peck:mn
12/27/78

NATIONAL SCIENCE FOUNDATION
WASHINGTON, D.C. 20550

OFFICE OF AUDIT
AND OVERSIGHT

January 2, 1979

Mr. H. H. Stolarow
Director
Procurement and Systems
Acquisition Division
General Accounting Office
441 G Street N.W., Room 6915
Washington, D.C. 20548

Dear Mr. Stolarow:

We are pleased to comment on the draft of your report "Scientific and Technical Bibliographic Information: A Valuable Resource Needs Improved Management" which was transmitted to us by the U.S. General Accounting Office's letter of November 28, 1978. The National Science Foundation has no bibliographic systems of the type discussed in your report. We agree that, in principle, full cost recovery should be made for the provision of such services when provided by a Federal agency except where such services are such a small part of an operation that the costs of operating a billing system would exceed the total funds collected. It might also be noted that in the initial period of providing a valuable new tool if total costs were billed to the few initial users, the use of the system might be strongly discouraged by very high unit costs. This could be detrimental to developing the full value of such a service in the long run.

We also note that this report considers only a small part, primarily costs and billings, of the complex problem of modern information dissemination. We suggest that the questionnaire used to elicit information be included, that some statistical summaries would be appropriate, and that sources of information might be more completely identified.

Thank you for the opportunity to comment on this draft report.

Sincerely yours,

Jerome H. Fregeau

Jerome H. Fregeau
Director
Office of Audit
and Oversight

APPENDIX VI

National Aeronautics and
Space Administration

Washington D C
20546

Reply to Attn of: L

FEB 2 1979

Mr. J. H. Stolarow
Director
Procurement and Systems
Acquisition Division
U.S. General Accounting Office
Washington, DC 20548

Dear Mr. Stolarow:

Thank you for the opportunity to review GAO's draft report entitled "Scientific and Technical Bibliographic Information: A Valuable Resource Needs Improved Management" (code 952176) dated November 30, 1978. Mr. Jack Heinbaugh, your cognizant Assistant Director, recognized that leave taken during the recent Holiday Season could impact the preparation and coordination of our comments, and in recent discussions, he agreed with the timing of our response.

The enclosed comments emphasize the need to consider, in GAO's report and in potential revisions of OMB Circular A-25, that NASA is required by statute to provide services to users, including the widest practicable and appropriate dissemination of information concerning its activities, with or without reimbursement. Possibly other agencies have somewhat similar statutory authorities.

If we can be of further assistance please let me know.

Sincerely,

Arnold W. Frutkin
Associate Administrator for
External Relations

Enclosure

NASA comments on GAO draft report entitled
"Scientific And Technical Bibliographic Information:
A Valuable Resource Needs Improved Management"
(GAO assignment code 952176)

NASA concurs with one qualification in the recommendations as stated on pages 36, and 43a of the draft report. We do notconcur in all the recommendations on pages 25 and 26, as discussed below.

GAO recommends (paraphrased) that the Director, OMB:

--direct the departments and agencies to require certification or other assurance that funds being requested or used for development or operations of bibliographic data bases will not be for services that are available from other Federal agencies or the private sector at lesser cost (see draft page 36).
--direct the departments and agencies to each designate a high level official responsible for information management (see draft page 43a).
--establish an interagency coordinating committee for information management, comprised of high level officials representing the individual departments and agencies, with a formal channel to OMB (see draft page 43a).

NASA comments:

We concur, with the qualification that NASA should not be required to undertake an exhaustive investigation to determine the current capability of the private sector. At most the certification should be based on information at hand and on the belief of the agency certifying official. In terms of the management of scientific and technical information NASA, since its inception, has actively served on a number of such high-level interagency committees and we fully understand the value of the kind of management group proposed.

GAO recommends (paraphrased) that the Director, OMB:

--require each department and agency to maintain adequate cost accounting records to implement recovery of costs for bibliographic information;
--assure that each department and agency recover the actual costs of bibliographic information provided to other Federal agencies consistent with 31 U.S.C 686(a);

--assure that uniform cost recovery policies (1) are established for bibliographic information provided to all non-Federal users and (2) are implemented by all departments and agencies consistent with 31 U.S.C 483(a) and OMB Circular A-25;
--assure that departments which sell bibliographic services indirectly through information retailers receive fair and equitable charges, perhaps based on usage;
--help develop more specific criteria for the general policy on cost recovery so that departmental decisions on information charging are uniform and made with OMB approval (see draft pages 25 and 26).

NASA comments:

We do not concur, for the following reasons.

Under the caption "Information Center Cost Recovery Practices", the draft report erroneously states (page 10), "... NASA ... had no charging policies". Also, some other GAO assumptions leading to the foregoing recommendations are inaccurate. Specifically, they fail to take into account the facts that:

(1) In implementing 31 U.S.C. 483a, NASA has published policies requiring reimbursement of all reasonable costs, with appropriate exceptions. See NMI 9080.1B and FMM 9080 (copies enclosed).

(2) NASA has separate statutory authority to provide services to Users with or without reimbursement. See §203(c)(6) of the Space Act of 1958 (42 U.S.C. 2473(c)(6)). This authority is separate and distinct from the authority granted in 31 U.S.C. 483a and 31 U.S.C. 686(a), the statutes cited in the draft report.

(3) More importantly, NASA is required by statute to provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof; see §203(a)(3) of the Space Act (42 U.S.C. 4273(a)(3)). We believe that this responsibility must be considered in determining to what extent NASA is to obtain reimbursement of its costs.

As a result of inaccurate assumptions, we believe that the draft report's conclusions (pp. ii, 24) are in error, insofar as they imply that NASA has adopted and followed cost-recovery policies and procedures which are not consistent with policies stated in Federal statute or OMB Circular A-25 to the extent applicable.

With respect to GAO's draft recommendations, we believe that any policy adopted or revised by OMB should take into account NASA's (and possibly other agencies') separate statutory authority to disseminate information and provide services at less than cost in order to achieve agency objectives. Moreover, we believe it continues to be appropriate to leave it to the individual agencies to determine those circumstances when the exceptions may be appropriately applied, but we would not object to OMB's providing further guidance to clarify the exceptions cited in the OMB Circular.

Further, we believe the draft recommendations, insofar as they would require agencies to charge information retailers a royalty based on usage without regard to the agency's cost of providing the service to a particular User, may be beyond the authority of an agency provided in 31 U.S.C. 483a. See National Cable Television Associates v. United States, 415 U.S. 336 (1974) and Public Service Co. of Colorado v. Andrus, 433 F. Supp. 144 (D. Colo. 1977). In any event, this proposal for charging royalties could be circumvented, it appears, by the information retailer seeking the information under the so-called Freedom of Information Act--5 U.S.C. 552.

In addition to the above legal aspects that need consideration with GAO's proposed across-the-board user-charge program for all federal agencies, the following comments apply to the transfer of scientific and technical information. We agree in principle with the concept of appropriate cost recovery for scientific and technical publications when they are made available to the general public. However, we also remain sensitive to the need for technology transfer, made in many instances, at no charge.

Vigorous transfer is vital to the maintenance and growth of the technological capabilities of the U.S. Considerable resources have been spent on the gathering and publication of the results of a multitude of NASA research and development programs. It is important that these results, funded from public monies, be made readily and fully available to the scientific/engineering community. It is "penny-wise and pound-foolish" to insist that full costs be recovered in all cases if such recovery would frustrate or retard in any way the effective dissemination of scientific and technical information to the community that can make best use of it and thereby maintain the technological excellence for which the U.S. is noted. Across-the-board user charges are not in keeping with effective technology transfer.

It is noted that since the inception of the NASA scientific and technical information program in the early 1960s, NASA has made its scientific and technical information available to the general public only on the basis of sale through both National Technical Information Service (NTIS and its predecessor organizations) and the Superintendent of Documents, U.S. Government Printing Office. Since early 1969, NASA has been reimbursed for its publications sold to the general public by NTIS. Since the middle of 1975, NASA itself has sold its scientific and technical documents to the domestic, contractor community on a subscription basis.

Distribution without charge is made to academe, U.S. Government agencies, foreign organizations with whom NASA has entered into a formal arrangement for the exchange of scientific and technical information, and domestic public libraries on the basis of stated exceptions in OMB Circular A-25.

Ray Kline
Associate Administrator for
Management Operations

GAO note: Page references in this appendix refer to our draft report and may not correspond to the pages of this final report.

APPENDIX VII

Information Industry Association

1968-1978. . . 10 Years of Service to the Industry

Directors

Chairman
Herbert R. Brinberg
American Can Company

Vice Chairman
Robert F. Asleson
R. R. Bowker Company

Treasurer
Robert H. Riley
Chase Manhattan Bank NA

Secretary
Haines B. Gaffner
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January 23, 1979

Information Industry Association
316 Pennsylvania Avenue, S.E.
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Washington D C 20003

Mr. J. H. Stolarow, Director
U. S. General Accounting Office
Washington, DC 20548

RE: Draft of a Proposed Report "Scientific and Technical Bibliographic Information: A Valuable Resource Needs Improved Management"

Dear Mr. Stolarow:

The IIA commends you on the facts, arguments and recommendations in the draft report on Scientific and Technical Bibliographic Information.

We endorse and support the recommendations in the report. The identification and documenting of those costs appropriate to be recovered from end users is an essential first step toward an information policy providing equity of treatment to all tax payers, on the one hand, and and users who derive special benefit from the information, on the other.

I

The specific recommendations for treating cost recovery issues are, in our view, sound and long overdue.

- Maintaining Records: Many government information activities are initiated, continued and expanded without reference to their true costs. In this rapidly expanding area of government activity it is imperative that true costs be identified to provide a basis for good management decisions on these programs.

- Relationships Between Agencies: This is an area of long standing concern to firms seeking to bid on projects. Unless federal agencies are guided by sound cost recovery principles in their bidding to serve sister agencies, competitive bids from private sources of such services will be lost to the government.

- Uniform Cost Recover Policies: As you suggest, a more businesslike government-wide approach is needed. It also is important to view the pricing of government information services in the light of their competitive impact on other services. A detailed cost recovery policy would help segregate information functions appropriate to government from those appropriate to the private sector. This is a critical first step in sorting out the complex relationships involved.

- Selling of Services: The collection of fair and equitable charges from information retailers is a valid goal. We believe, however, that the suggestion of some form of royalty or per-use charge for

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government data bases raises significant copyright issues inappropriate for extended discussion in the context of this report. We urge you to carefully examine the legal basis available to the government in view of the copyright law which states that copyright shall not subsist in government works. In the absence of copyright, there appears to be no legal basis for the collection by the government of per-use, or essentially royalty, fees.

- Specific Criteria for a General Policy: There are tremendous advantages to be realized for all concerned from the identification and implementation of national uniformity in the treatment of cost recovery issues. At present, it is impossible to tell from moment to moment what policy will apply in which agency. This condition has discouraged the application of private risk capital to the dissemination of government generated information.

II

Duplication issues are of equally high concern to the industry.

The proposal that OMB require a certification that funds requested will not be for services otherwise available would introduce rational thinking to the current government information service program. Today, there is no cross cutting policy in favor of avoiding duplication. Each activity is left free to do its own thing. No attention is given to the overall information handling capabilities of the country. The conventional wisdom today, therefore, favors everyone doing whatever he wishes so long as it increases the accessibility of information for someone in the short run. A longer view is needed. The certification process would require everyone to look to the broader picture and to the development of a sound information handling system in this country capable of meeting the long term needs of a democratic free enterprise economic system.

III

The cost recovery questions lead quite naturally into management questions.

We are enthusiastic in our support for your recommendation that a high level official with responsibility for managing the information resources of each agency be designated.

Vast resources are being applied to a variety of information functions: libraries, data bases, word processing, data processing, records management, research and development, and more. These information functions, taken together, represent an extremely large proportion of government effort. They should be brought under professional management control just as finance, personnel, materials and other essential resources have been.

The IIA operates a Program for Information Managers, Associated Information Managers (AIM), specifically committed to fostering the development of this management discipline. The recommendation to create such positions in government agencies is an important and vital step toward assuring effective use of these

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growing resources. The establishment of an interagency coordinating committee to strengthen this emerging management discipline would greatly enhance the effectiveness of the whole information resource management effort.

IV

Information Industry Viewpoint

The Information Industry Association includes more than a hundred information companies engaged in the creation, distribution and retailing of information equivalents of people, events and artifacts of human existence, past, present and future. The industry is premised on two things: (1) information services, tailored to specific user needs, require producers to add value to raw data, and (2) competition in price, quality and packaging in a marketplace offers the only certainty users can have that they are getting the best service at the best price possible. No other method exists.

The industry consists of at least five major segments:

(1) Information producers - primary and secondary inkprint publishers, data base producers, micropublishers;

(2) Information distributors - providing public access to one or more data bases stored on a central computer facility;

(3) Information-on-demand, online search services - a large number of companies have emerged providing end users essentially retail access to data bases stored on distributor computer facilities, document fulfillment and a multitude of other services. These services make it no longer necessary for an end user to deal directly with several distributors or hundreds of data base producers just as it is not necessary for Harry Homeowner to deal directly with hardware manufacturers or distributors when performing maintenance, remodeling or repairs on his home. He goes to a retail hardware store. Similarly, today's sophisticated information users are looking to retailers to serve their information needs;

(4) Information technologies - specific companies marketing hardware and software are seeking new applications for their inventions, innovations, inspirations and perspirations;

(5) Information service contractors - a significant number of information industry firms specialize in the performance of information handling functions under contract.

Our basic view is that government information requirements should be met first through the acquisition of existing products and services.

In the event such existing products or services do not substantially meet government needs "in present form or by modification," such requirements should be satisfied by contracting out for such services.

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Only in the event that neither existing nor contracted for products or services are available should government perform the service in house.

V

Recommendation

While we think that your recommendations would greatly strengthen the management and effectiveness of government information activities, we feel a full statement of government policy in this area requires a commitment not just to cost recovery, but to a basic reliance on the operation of the competitive marketplace as well. We urge that the final version of your report state explicitly a policy already implicit in this draft.

We believe that there already exists a clear government policy favoring reliance on the private sector. Reference to this policy is implicit in your report, but the explicit detailed statement of that policy is missing.

This policy is set forth in OMB Circular A76 in the strongest possible language:

> "In a democratic free enterprise economic system, the Government should not compete with its citizens. The private enterprise system, characterized by individual freedom and initiative, is the primary source of national economic strength. In recognition of this principle, it has been and continues to be the general policy of the Government to rely on competitive private enterprise to supply the products and services it needs."

We recommend that this keystone policy be incorporated in your report. Your report, combined with this statement outlines a basic landmark national policy - a real commitment to sound economic cost accounting procedures and to a reliance on the competitive information marketplace to provide information goods and services at competitive prices and competitive quality.

In the absence of reference to A76 policy, the emphasis in your report on dealing with information in business-like ways could be construed instead to endorse government participation in the business of information itself.

VI

Comments

Several other points in the report are of concern to the industry and additional comments on these items are provided below.

(A) The information industry is a major growth industry of the future providing exciting new products and services today which only yesterday were unavailable. The capabilities of this industry should be relied on today even in cases where government information activities were undertaken when the industry was not recognized to be capable of providing these services. In short, we believe, consistent with the spirit of your report that "sun down" policies should be developed and applied to existing government information services.

(B) The report tends to confuse a number of different economic functions under the label "bibliographic services."

1. The general thrust of the report asks government agencies to be very careful about creating new data bases for very good and sound reasons. However, no distinction is drawn between production and distribution of data bases. While there are challenges to government "creating" data bases, there is little or no question raised to government distribution of data bases.

   Data base distribution is vastly different from data base creation. From a budgetary standpoint data base distribution is open ended, with the built in ability to "prove" demand for increased computer capacity; this capacity can then be used to argue for increased data bases for distribution and so on and so on, ad infinitium.

   The report should draw this distinction. The same careful thought which has developed a procedure for guiding "data base" generation activities should be applied to developing procedures for guiding "data base" distribution activities. The same commitment to reliance on the competitive information marketplace would require government to use existing commercial networks. Clearly, the certification requirement would result in all "distribution" of data bases being performed by existing commercially available data base distribution services.

2. The provision of "retail" services should also be distinguished.

   Just as in the case of data base generation and data base distribution, the economic function retailing needs separate recognition and separate treatment.

   On the one hand, government agencies are charged with "service" responsibilities to specific constituencies in many cases. Providing information is part of that "service" function.

   On the other hand, the ability to provide these new services has stimulated some agencies to launch full fledged retail services, even to the point of promoting "complete business information" services where only export assistance is mandated by law.

   While the government cannot be thwarted in providing services simply because the capability now enables them to provide more complete and meaningful services, a commitment to the competitive information marketplace requires:

   (1) that promotion and pricing policies be carefully monitored so as to prevent government from competing with its citizens and

   (2) that government agencies live by the principle that they exist to "teach people to fish" rather than to provide fish.

This would enable government to perform information functions only until such times as citizens learned how to do it for themselves producing a leaner government and a more self-reliant citizency. The certification requirement underscores this fundamental approach taken in your report.

(C) Cost recovery for services sold indirectly. This question relates to the desirability of a government agency which produces a data base to be paid for its use when a distributor of data bases offers it to the public. The discussion in the report is too general to offer sound guidance on the question of the payment of royalties for the use of government generated "data bases."

1. First: As we noted earlier, the legal basis for such royalty payments is open to question. The copyright law provides that copyright shall not subsist in government works. Is a data base a government work? If royalty payments are not appropriate under copyright, is there a sound contractual basis outside the area of copyright preemption? It should be noted that the NTIS example cited is not court tested.

2. Second: Are all data bases alike? Do they yield to identical policy treatment?

   We believe that the machine-readable by-product of the computer composition process is not a data base in the sense that it contains any "value added" over and above what was needed to create the inkprint product. Such products should be made available on equal terms to all just as the law requires the public printer to make printing plates available at cost of reproduction.

(D) A25 exceptions need clarification. Possible exceptions to the "user charges" philosophy of A25 for (1) foreign and international agencies, (2) non-profits and (3) state and local governments are troublesome.

1. Foreign - Why should taxpayers pay fully accounted costs and foreign users be given information free of those costs? The gift of "information" from a U.S. government agency also can result in the creation of a foreign competitor for U.S. information services. It also preempts markets for U.S. services and it defeats the cost recovery purposes outlined in your report.

2. Non-profit - Many non-profits also market information. To provide them free government information while charging others, pointlessly abrogates the cost recovery principle.

3. State and local government - Providing free services to state and local governments tends to exclude private sector services and will ultimately deprive state and local government services which private companies could also sell to lawyers, corporations and others achieving cost effectiveness for all.

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(E) Scientific and Technical Information is delimiting. This report, rather than standing on Scientific and Technical Information alone, needs to be tied to the emerging overall governmental concern for appropriate management of all information resources as your concluding recommendations clearly call for.

VII

Conclusion

The time is ripe for this report. Its recommendations are basically sound and we support them. It will be a major guide to management of information resources in government. We urge that it explicitly state a commitment to the competitive information marketplace; a commitment implicit in the draft and explicit in OMB Circular A76. We suggest that the report distinguish between the several economic functions, production, distribution and retail, embraced by the overall subject, bibliographic services; that guidelines be developed covering government performance in each of these functions; that the legal basis for information user charges be clarified; that different types of machine-readable files be identified and treated separately; that certain A25 exceptions be clarified; and that the recommended treatment of Scientific and Technical bibliographic information be used as illustrative of the kinds of approaches needed for management of information resources as a whole.

Thank you for your efforts to date on this most useful report and for your consideration of our recommendations.

Sincerely,

Paul G. Zurkowski

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APPENDIX VIII

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